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Applicant : Richard E. Smalley *et al.*  
Serial No. : 10/730,630  
Filed : December 8, 2003  
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Attorney's Docket No.: 11321-P006WUD1

Listing of the Claims:

1-54. (Cancelled)

55. (Previously presented) A composition of matter comprising single wall carbon nanotubes wherein at least 95% of said single wall carbon nanotubes have a diameter in the range of 0.6 nm to 0.8 nm.

56. (Previously presented) The composition of matter of claim 55, wherein said single wall carbon nanotubes are aggregated as ropes.

57. (Previously presented) The composition of matter of claim 55, wherein said single wall carbon nanotubes comprise (5,5) single wall carbon nanotubes.

58-68. (Cancelled)

69. (Previously presented) A product made by a process comprising:

- (a) providing a gas stream comprising CO at superatmospheric pressure;
- (b) providing a gaseous catalyst precursor stream comprising a gaseous catalyst precursor comprising atoms of a transition metal selected from the group consisting of Group VI metals, Group VIII metals and mixtures thereof, said gaseous catalyst precursor stream being provided at a temperature below the decomposition temperature of said catalyst precursor;
- (c) heating said gas stream comprising CO to a temperature that is at least above the decomposition temperature of said catalyst precursor and is sufficient to form single wall carbon nanotubes;

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- (d) mixing said heated gas stream comprising CO with said gaseous catalyst precursor stream into a reaction mixture in a mixing zone to rapidly heat said catalyst precursor to a temperature that is
  - (i) above the decomposition temperature of said catalyst precursor,
  - (ii) sufficient to promote the formation of catalyst metal atom clusters and
  - (iii) sufficient to promote the initiation and growth of single wall carbon nanotubes; and
- (e) forming solid products comprising the single wall carbon nanotubes that are in a resulting gaseous stream, wherein at least 99% of atoms of the solid products are atoms of the single wall carbon nanotubes.

70. (Cancelled)

71. (Previously presented) A product made by a process comprising:

- (a) providing a gas stream comprising CO at superatmospheric pressure;
- (b) providing a gaseous catalyst precursor stream comprising a gaseous catalyst precursor comprising atoms of a transition metal selected from the group consisting of Group VI metals, Group VIII metals and mixtures thereof, said gaseous catalyst precursor stream being provided at a temperature below the decomposition temperature of said catalyst precursor;
- (c) heating said gas stream comprising CO to a temperature that is at least above the decomposition temperature of said catalyst precursor and is sufficient to form single wall carbon nanotubes;
- (d) mixing said heated gas stream comprising CO with said gaseous catalyst precursor stream into a reaction mixture in a mixing zone to rapidly heat said catalyst precursor to a temperature that is
  - (i) above the decomposition temperature of said catalyst precursor,
  - (ii) sufficient to promote the formation of catalyst metal atom clusters and

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- (iii) sufficient to promote the initiation and growth of single wall carbon nanotubes; and
- (e) forming solid products comprising the single wall carbon nanotubes that are in a resulting gaseous stream, wherein at least 95% of said single wall carbon nanotubes have a diameter in the range of 0.6 nm to 0.8 nm.

72. (Cancelled)

73. (Previously presented) A product made by a process comprising:

- (a) providing a CO gas stream comprising CO, wherein said CO gas stream is at a superatmospheric pressure;
- (b) providing a gaseous catalyst precursor stream comprising a catalyst precursor;
- (c) mixing the CO gas stream and the gaseous catalyst precursor stream to form a reaction mixture, wherein said mixing step occurs under reaction conditions to form single wall carbon nanotubes; and
- (d) reacting said reaction mixture to form carbon products in tubular form, wherein at least 99% atom % of the carbon products in tubular form are single wall carbon nanotubes.

74. (Previously presented) The product of claim 73, wherein at least 75% of said single wall carbon nanotubes have a diameter in the range of 0.6 nm to 0.8 nm.

75. (Previously presented) The product of claim 73, wherein at least 95% of said single wall carbon nanotubes have a diameter in the range of 0.6 nm to 0.8 nm.